

What is claimed is:

1. A crop harvesting header configured for attachment to the mobile frame of a harvesting machine, said header comprising:

a crop cutting assembly defining a laterally extending cutting zone along which crop material is severed from the ground by the cutting assembly;

a pair of laterally extending crop conditioning rolls cooperatively defining a nip therebetween that is spaced upwardly and rearwardly from the cutting zone; and

a crop conveying element having at least a portion thereof that is moveable upwardly and rearwardly between the cutting zone and the nip to convey crop cut by the cutting assembly toward the nip.

2. A crop harvesting header as claimed in claim 1, said crop cutting assembly including a series of rotary cutters rotatable about individual, upright axes.

3. A crop harvesting header as claimed in claim 1; header framework defining a laterally extending discharge opening spaced rearwardly from the cutting zone, with the opening being configured to receive cut crop from the series of cutters, said cutting assembly projecting beyond the ends of the discharge opening to present a pair of outboard cutter sections; and a pair of crop conveying assemblies, each disposed over a respective one of the outboard cutter sections for conveying crop cut by the respective one of the outboard cutter sections rearwardly and inwardly to the discharge opening.

4. A crop harvesting header as claimed in claim 3, each of said crop conveying assemblies including a plurality of laterally spaced impeller cages rotatable about individual, upright axes, each of said impeller cages presenting a front moveable boundary that is spaced forwardly of the adjacent inwardly spaced impeller cage.

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A crop harvesting header as claimed in claim 4,
said crop cutting assembly including a series of rotary cutters rotatable about
individual, upright axes,
each outboard cutter section including a first cutter and an inwardly spaced
second cutter,
said plurality of impeller cages including a first impeller cage mounted to the first
cutter for rotational movement therewith, a second impeller cage
mounted to the second cutter for rotational movement therewith, and an
intermediate impeller cage suspended from the header framework
between the first and second impeller cages.

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A crop harvesting header as claimed in claim 1,
said crop cutting assembly and said conveying element defining a downwardly
open area therebetween.

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A crop harvesting header as claimed in claim 1,
said conveying element comprising a laterally extending, rotatable conveying
roller having an outer periphery defining the upwardly and rearwardly
moveable portion of the conveying element.

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A crop harvesting header as claimed in claim 1,
said conveying roller and said cutting assembly presenting a downwardly open
area therebetween.

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A crop harvesting header as claimed in claim 1,
said conveying roller including at least one helical rib extending along the roller
periphery and having opposite inclination on either side of the midpoint
of the conveying roller.

A crop harvesting header as claimed in claim 1,
said conveying roller having a relatively smaller diameter than the conditioning
rolls.

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10 ~~18~~. A crop harvesting header as claimed in claim ⁹~~18~~,
 said conditioning rolls being in a stacked relationship to present an upper
 conditioning roll and a lower conditioning roll,
 said lower conditioning roll being rotatable about a lower conditioning roll axis,
 5 said conveying roller being rotatable about a conveying roller axis that is lower
 than the lower conditioning roll axis.

11 ~~19~~. A crop harvesting header as claimed in claim ¹⁰~~19~~,
 said cutting zone being substantially planar and generally vertically aligned with
 10 the conveying roller axis.

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13. A crop harvesting machine comprising:

- a crop cutting assembly defining a laterally extending cutting zone along which crop material is severed from the ground by the cutting assembly;
- a pair of laterally extending crop conditioning rolls cooperatively defining a nip therebetween that is spaced upwardly and rearwardly from the cutting zone; and
- a crop conveying element having at least a portion thereof that is moveable upwardly and rearwardly between the cutting zone and the nip to convey crop cut by the cutting assembly toward the nip.

~~14. A crop harvesting machine as claimed in claim 13,~~

- said crop cutting assembly including a series of rotary cutters rotatable about individual, upright axes.

- 13 15. A crop harvesting machine as claimed in claim 13,
- framework defining a laterally extending discharge opening spaced rearwardly from the cutting zone, with the opening being configured to receive cut crop from the series of cutters,
 - said cutting assembly projecting beyond the ends of the discharge opening to present a pair of outboard cutter sections; and
 - a pair of crop conveying assemblies, each disposed over a respective one of the outboard cutter sections for conveying crop cut by the respective one of the outboard cutter sections rearwardly and inwardly to the discharge opening.

- 14 16. A crop harvesting machine as claimed in claim 13,
- each of said crop conveying assemblies including a plurality of laterally spaced impeller cages rotatable about individual, upright axes,
 - each of said impeller cages presenting a front moveable boundary that is spaced forwardly of the adjacent inwardly spaced impeller cage.

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17. A crop harvesting machine as claimed in claim 16, said crop cutting assembly including a series of rotary cutters rotatable about individual, upright axes, each outboard cutter section including a first cutter and an inwardly spaced second cutter, said plurality of impeller cages including a first impeller cage mounted to the first cutter for rotational movement therewith, a second impeller cage mounted to the second cutter for rotational movement therewith, and an intermediate impeller cage suspended from the framework between the first and second impeller cages.

18. A crop harvesting machine as claimed in claim 13, said crop cutting assembly and said conveying element defining a downwardly open area therebetween.

19. A crop harvesting machine as claimed in claim 18, said conveying element comprising a laterally extending, rotatable conveying roller having an outer periphery defining the upwardly and rearwardly moveable portion of the conveying element.

20. A crop harvesting machine as claimed in claim 19, said conveying roller and said cutting assembly presenting a downwardly open area therebetween.

21. A crop harvesting machine as claimed in claim 19, said conveying roller including at least one helical rib extending along the roller periphery and having opposite inclination on either side of the midpoint of the conveying roller.

22. A crop harvesting machine as claimed in claim 19, said conveying roller having a relatively smaller diameter than the conditioning rolls.

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³¹ ~~23~~ ²⁰ ~~22~~ A crop harvesting machine as claimed in claim ~~22~~,
 said conditioning rolls being in a stacked relationship to present an upper
 conditioning roll and a lower conditioning roll,
 said lower conditioning roll being rotatable about a lower conditioning roll axis,
 said conveying roller being rotatable about a conveying roller axis that is lower
 than the lower conditioning roll axis.

³¹ ~~23~~ ²⁰ ~~22~~ A crop harvesting machine as claimed in claim ~~23~~,
 said zone being substantially planar and generally vertically aligned with the
 conveying roller axis.

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~~23~~ ²³ 25. A crop harvesting machine comprising:
a mobile frame; and

a harvesting header supported on the frame for harvesting crop as the frame
moves across a field, said header including--

a cutter bed extending across the path of travel of the frame and
including a series of rotary cutters rotatable about individual,
upright axes,

header framework defining a laterally extending discharge opening
spaced rearwardly from the cutter bed, with the opening being
configured to receive cut crop from the series of cutters,

a pair of crop conditioning rolls spanning the discharge opening and
defining a nip therebetween that is spaced upwardly and
rearwardly from the cutter bed, and

a laterally extending crop conveying roller located between the cutter
bed and the nip,

said conveying roller being rotatable in a direction to move crop from
the cutter bed toward the nip.

~~24~~ ²³ 26. A crop harvesting machine as claimed in claim ~~25~~ ²³,
said frame carrying a power source for propelling the frame across the field.

~~25~~ ²³ 27. A crop harvesting machine as claimed in claim ~~26~~ ²³,
said series of rotary cutters including two sets of outboard cutters, with each of
the sets being located adjacent an end of the cutter bed and substantially
outboard of the discharge opening; and
a pair of crop conveying assemblies, each disposed over a respective one of the
sets of outboard cutters for conveying crop cut by the respective one of
the sets of outboard cutters rearwardly and inwardly to the discharge
opening.

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~~215~~ ²⁸ A crop harvesting machine as claimed in claim ²⁵~~27~~,
each of said crop conveying assemblies including a plurality of laterally spaced
impeller cages rotatable about individual, upright axes,
each of said impeller cages presenting a front moveable boundary that is spaced
forwardly of the adjacent inwardly spaced impeller cage.

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~~27~~ ²⁹ A crop harvesting machine as claimed in claim ²⁶~~28~~,
each set of outboard cutters including a first cutter and an inwardly spaced
second cutter,
said plurality of impeller cages including a first impeller cage mounted to the first
cutter for rotational movement therewith, a second impeller cage
mounted to the second cutter for rotational movement therewith, and an
intermediate impeller cage suspended from the framework between the
first and second impeller cages.

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~~28~~ ³⁰ A crop harvesting machine as claimed in claim ²⁷~~29~~,
said cutter bed and said conveying roller defining a downwardly open area
therebetween.

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~~29~~ ³¹ A crop harvesting machine as claimed in claim ²⁸~~30~~,
said conveying roller including at least one helical rib extending along the roller
periphery and having opposite inclination on either side of the midpoint
of the conveying roller.

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~~30~~ ³² A crop harvesting machine as claimed in claim ²⁹~~31~~,
said conveying roller having a relatively smaller diameter than the conditioning
rolls.

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~~31~~ ³³ A crop harvesting machine as claimed in claim ³⁰~~32~~,
said conditioning rolls being in a stacked relationship to present an upper
conditioning roll and a lower conditioning roll,
said lower conditioning roll being rotatable about a lower conditioning roll axis,
said conveying roller being rotatable about a conveying roller axis that is lower
than the lower conditioning roll axis.

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~~33~~^{33/} A crop harvesting machine as claimed in claim ~~33~~^{33/},
said cutter bed defining a substantially planar cutting zone,
said conveying roller axis being generally vertically aligned with the cutting
zone.

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